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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Jeffrey Blyth

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EXAMINER

CALLAWAY, JADE R

ART UNIT

PAPER NUMBER

2872

NOTIFICATION DATE

DELIVERY MODE

02/22/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

euspto@slspatents.com

Office Action Summary	Application No. 10/565,094	Applicant(s) BLYTH ET AL.	
	Examiner JADE R. CALLAWAY	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendments to the claims, in the submission dated 12/18/09, are acknowledged and accepted.

Response to Arguments

2. Applicant's arguments filed 12/18/09 have been fully considered but they are not persuasive. Applicants argue that the prior art of record does not teach or reasonably suggest that "the non-planar mirror is concave, convex, capable of effecting retroreflection, recorded using one or more reflective beads, or a prism." The Examiner respectfully disagrees and notes that the claims are rejected under 35 U.S.C. 103, not 35 U.S.C. 102, and that the Examiner is relying on the combination of references to teach the limitations as currently claimed. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this instance, Lowe et al. disclose that a hologram can be a reflection hologram (i.e. the hologram is formed as a mirror) [col. 4, lines 32-39]. Yin et al. teach that a hologram can be formed as a non-planar surface (e.g. 21, photopolymer layer) wherein the non-planar surface is convex and/or concave (e.g. figures 1-4) [col. 2, lines 7-56]. As such, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the hologram substrate of Lowe et al. to have curvature, as taught by Yin et al.,

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in order to have a reflection hologram formed on a curved surface without distorting the optical properties of the hologram layer. Thus increasing the number of applications possible for the holographic element.

The Examiner also notes that the limitation "wherein the non-planar mirror is concave, convex, capable of effecting retroreflection, recorded using one or more reflective beads, or a prism" is written in the alternative, such that only one orientation of the non-planar mirror is necessary to meet the limitation as currently claimed. It appears from Applicant's arguments that the non-planar mirror must possess both the properties of concavity and convexity in the one mirror. However, Examiner disagrees with that position in that the comma indicates an "or" and it is treated as concave or convex—not concave and convex. Additionally, if it is for Applicant's intent to claim concave and convex, the Examiner notes that there is no support for such an embodiment in the Specification or Drawings as originally filed. Further, note that the Court has held that a mere change in shape of an element is generally recognized as being within the level of ordinary skill in the art when the change in shape is not significant to the function of the combination, see **In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)**. All mirrors, whether they be concave, convex or cube-corner shaped, are capable of effecting retroreflection. Further, one would have been motivated to have the hologram be recorded using one or more reflective beads, or have the non-planar mirror be a corner cube prism, in order to reduce scattering of light during reflection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-6 and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowe et al. (5,989,923), Stephens et al. (GB 2054995 A) and Yin et al. (5,499,117) of record.

Consider claim 1, Lowe et al. disclose (e.g. figure 1a) an apparatus for detecting an analyte, comprising: a sensor (9, sensor) comprising a medium (10, support medium) and, disposed therein, a hologram (17, hologram) wherein an optical characteristic of the hologram changes as a result of a variation of a physical property of the medium resulting from interaction with the analyte, and wherein the hologram is formed as a non-planar mirror (reflection hologram with fringes that can be flat or curved) [col. 4, lines 32-39, col. 10, lines 4-39]. However Lowe et al. do not disclose a unit of optical fibers for transmitting light to and from the hologram or that the non-planar surface is concave, convex, capable of effecting retroreflection, recorded using one or more reflective beads, or a prism. Lowe et al. and Stephens et al. are related as devices comprising holograms. Stephens et al. teach (e.g. figures 1-3) a unit of optical fibers (3-14, optical fibers) for transmitting light to and from a hologram (17, reflecting surface) [pg. 2, lines 42-103]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Lowe et al., as

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taught by Stephens et al., in order to guide light with the narrowest possible bandwidth to the holographic surface so that the colors reflected are indicative of the part of the reflector from which it is received.

However, the modified Lowe et al. reference does not disclose that the non-planar surface is convex, concave, capable of effecting retroreflection, recorded using one or more reflective beads, or a prism. Lowe et al., Stephens et al. and Yin et al. are related as devices utilizing holograms. Yin et al. teach a non-planar surface that is convex and/or concave (e.g. figures 1-4) [col. 2, lines 7-56]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the hologram substrate of the modified Lowe et al. reference to have curvature, as taught by Yin et al., in order to have a reflection hologram formed on a curved surface without distorting the optical properties of the hologram layer to increase the number of applications possible for the holographic element.

Consider claim 2, the modified Lowe et al. reference discloses (e.g. figure 4 of Stephens et al.) an apparatus wherein the hologram is formed as a concave mirror [pg. 3, lines 18-22].

Consider claim 3, the modified Low et al. reference discloses (e.g. figure 1 of Yin et al.) an apparatus wherein the hologram is formed as a convex surface [col. 2, lines 7-56 of Yin et al.].

Consider claim 4, the modified Lowe et al. do not disclose that the hologram is formed as a corner cube prism. Note that the Court has held that a mere change in shape of an element is generally recognized as being within the level of ordinary skill in

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the art when the change in shape is not significant to the function of the combination, see **In re Dailey**, 357 F.2d 669, 149 USPQ 47 (CCPA 1966). All mirrors, whether they be concave, convex or cube-corner shaped, are capable of effecting retroreflection. Further, one would have been motivated to have the hologram be formed as a corner cube prism in order to reduce scattering of light during reflection.

Consider claim 5-6, Lowe et al. disclose (e.g. figure 1a) a method for the production of an apparatus comprising a sensor (9, sensor) comprising a medium (10, support medium) and, disposed therein, a hologram (17, hologram), wherein an optical characteristic of the hologram changes as a result of a variation of a physical property of the medium resulting from interaction with the analyte, and wherein the hologram is formed as a non-planar mirror (reflection hologram with fringes that can be flat or curved); wherein the method comprises forming, in a non-planar medium (can be flat or curved), a hologram, as a non-planar mirror (reflection hologram with fringes that can be flat or curved), that is recorded using a planar mirror [col. 4, lines 32-39, col. 10, lines 4-39]. However Lowe et al. do not disclose that the apparatus comprises a unit of optical fibers or that the non-planar surface is concave, convex, capable of effecting retroreflection, recorded using one or more reflective beads, or a prism. Lowe et al. and Stephens et al. are related as devices comprising holograms. Stephens et al. teach (e.g. figures 1-3) an apparatus comprising a unit of optical fibers (3-14, optical fibers) [pg. 2, lines 42-103]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Lowe et al., as taught by Stephens et al., in order to guide light with the narrowest possible bandwidth to the

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holographic surface so that the colors reflected are indicative of the part of the reflector from which it is received.

However, the modified Lowe et al. reference does not disclose that the non-planar surface is convex, concave, capable of effecting retroreflection, recorded using one or more reflective beads, or a prism. Lowe et al., Stephens et al. and Yin et al. are related as devices utilizing holograms. Yin et al. teach a non-planar surface that is convex (e.g. figure 1) [col. 2, lines 7-56]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the modified Lowe et al., reference, in view of Yin et al., in order to have a curved surface without distorting the optical properties of the hologram layer.

Consider claim 14, Lowe et al. disclose (e.g. figure 1a) a method for the detection of an analyte, which comprises remotely interrogating, with light, the holographic element of a sensor (9, sensor) comprising a medium (10, support medium) and, disposed therein, a hologram (17, hologram), wherein an optical characteristic of the hologram changes as a result of a variation of a physical property of the medium resulting from interaction with the analyte, and wherein the hologram is formed as a non-planar mirror (reflection hologram with fringes that can be flat or curved); wherein the method further comprises detecting any change in an optical characteristic of the sensor [col. 4, lines 32-39, col. 10, lines 4-39]. However Lowe et al. do not disclose that the interrogating is via a unit of optical fibers that transmits the light to and from the hologram or that the non-planar surface is concave, convex, capable of effecting retroreflection, recorded using one or more reflective beads, or a prism. Lowe et al. and

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Stephens et al. are related as devices comprising holograms. Stephens et al. teach (e.g. figures 1-3) interrogating via a unit of optical fibers (3-14, optical fibers) that transmits the light to and from a hologram (17, reflecting surface) [pg. 2, lines 42-103]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Lowe et al., as taught by Stephens et al., in order to guide light with the narrowest possible bandwidth to the holographic surface so that the colors reflected are indicative of the part of the reflector from which it is received.

However, the modified Lowe et al. reference does not disclose that the non-planar surface is convex, concave, capable of effecting retroreflection, recorded using one or more reflective beads, or a prism. Lowe et al., Stephens et al. and Yin et al. are related as devices utilizing holograms. Yin et al. teach a non-planar surface that is convex (e.g. figure 1) [col. 2, lines 7-56]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the modified Lowe et al., reference, in view of Yin et al., in order to have a curved surface without distorting the optical properties of the hologram layer.

Consider claim 15, Lowe et al. teach (e.g. figure 1a) a method wherein the light source is collimated (12, laser light rays from a laser source) [col. 10, lines 4-14].

Consider claims 16-19, the modified Lowe et al. reference discloses a recording surface that is formed as a non-planar surface (e.g. figure 1 of Yin et al.) [col. 2, lines 7-40 of Yin et al.].

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5. Claims 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowe et al. (5,989,923) in view of Stephens et al. (GB 2065995 A) and Yin et al. (5,499,117) as applied to claims 1 and 5 above, and further in view of Mizutani et al. (6,483,611) of record.

Consider claims 7-10, the modified Lowe et al. do not specifically disclose a sensor wherein the hologram is formed using a planar, non-planar, concave mirror or a mirror capable of effecting retroreflection. Lowe et al., Stephens et al. and Mizutani et al. are related as devices utilizing holograms. Mizutani et al. teach (e.g. figure 1-2) a sensor wherein the hologram is formed using a planar, non planar and concave mirrors [col. 1, lines 59-67, col. 2, lines 7-9, 65-68, col. 3, lines 1-11 and col. 15, lines 26-53]. Note that a retro reflector is defined as a device that reflects light back to its source. As such, the mirrors of Mizutani et al. will function as retroreflectors. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Lowe et al., as taught by Mizutani et al., in order to allow for magnification or reduction of an image formed from the hologram element.

Consider claim 11, the modified Lowe et al. reference does not disclose that the hologram is recorded using a corner cube prism. Note that the Court has held that a mere change in shape of an element is generally recognized as being within the level of ordinary skill in the art when the change in shape is not significant to the function of the combination, see **In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)**. All mirrors, whether they be concave, convex or cube-corner shaped, are capable of effecting retroreflection. Further, one would have been motivated to have the hologram be

recorded using a corner cube prism in order to reduce scattering of light during reflection.

Consider claim 12, the modified Lowe et al. reference does not disclose that the hologram is recorded using reflective beads. Note that the Court has held that a mere change in shape of an element is generally recognized as being within the level of ordinary skill in the art when the change in shape is not significant to the function of the combination, see **In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)**. Further, one would have been motivated to have the hologram be recorded using reflective beads in order to reduce scattering of light during reflection and increase reflective capabilities.

Consider claim 13, the modified Lowe et al. reference discloses (e.g. figure 2 of Mizutani et al.) a method wherein the hologram is recorded using a lens (542, object lens) placed between the light source and the medium [col. 2, lines 19-35 of Mizutani et al.].

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JADE R. CALLAWAY whose telephone number is (571)272-8199. The examiner can normally be reached on Monday to Friday 6:00 am - 3:30 pm est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JRC
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